

Interactive comment on “Mid-Cretaceous paleoenvironmental changes in the western Tethys” by Cinzia Bottini and Elisabetta Erba

Anonymous Referee #2

Received and published: 17 June 2018

This is an interesting paper that presents new data as well as incorporating the results of previously published work to construct a continuous section record spanning the mid-Cretaceous (Aptian – Cenomanian). In general, the authors do a fine job in using this record to examine the five goals that they propose in the Introduction, including the overall goal of evaluating the evolution of climate and surface water fertility in the western Tethys region from the mid-Cretaceous. One of the five goals of the paper (presented in the introduction) is to assess the degree of connection of temperature and fertility variations. This is done by the authors in a qualitative manner. This might be expressed better by a simple correlation analysis of all of the data points as well as those from select parts of the sequence (e.g., during hyperthermal intervals). In terms of one of their goals, the correlation of nannofossil proxies with other (geochemical)

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paleotemperature proxies, they show a reasonably good correlation (in a qualitative sense). This correlation is best in the Aptian, where the m-TI is directly calibrated with the other paleotemperature proxies, but begins to diverge higher up. Significant divergence of the m-TI and the Tex86 paleotemperature estimates in the upper Cenomanian may reflect the evolutionary changes in nannofossil communities that renders the TI assemblage less useful for paleotemperature estimation. In general, this manuscript needs only minor revision prior to publication, where it will serve as a useful addition to our knowledge.

Some minor specific comments:

Several of the minor points (labeled with letters) in the text and in Figure 5 are apparently defined by only 1-2 data points, strongly suggesting that they may be statistical anomalies, especially given the implied precision of percentages from counts of only 300 specimens. I think that the authors may wish to reconsider these designations and their discussions. The diagrams in Figures 2-4 illustrate the changes in species abundances in the various sections. These diagrams would be easier to interpret if the scales for the species abundances were (mostly) similar. In addition, these diagrams feature a variable called “Total nannofossil abundance (# of Fields of View)”. The reader can guess that this represents how many FOV had to be examined to get to a count of “at least 300 specimens”, but one is never sure unless the authors specify. Perhaps a sentence in the methods section (2.2) would alleviate this little problem.

Is the raw data going to be supplied with this paper? I saw no mention of how it could be obtained. It would be useful to others in evaluating the paper.

Line 369 & 375 – Blake Nose rather than Black Nose.

Interactive comment on Clim. Past Discuss., <https://doi.org/10.5194/cp-2018-34>, 2018.

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